

H1392

0055848

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1392

RFW LOT # :0106L112

CLIENT ID	RFW #	MTX	PREP #	COLLECTN DATE	REC	EXT/PREP	ANALYSIS
B12632	001	S	01LVX179	06/15/01	06/20/01	N/A	06/23/01
B12632	001 MS	S	01LVX179	06/15/01	06/20/01	N/A	06/23/01
B12632	001 MSD	S	01LVX179	06/15/01	06/20/01	N/A	06/23/01
LAB QC:							
VBLKFV	MB1	S	01LVX179	N/A	N/A	N/A	06/23/01
VBLKFV	MB1 BS	S	01LVX179	N/A	N/A	N/A	06/23/01



RECEIVED
NOV 15 2001

EDMC



Client: TNU-HANFORD B01-084
RFW #: 0106L112
SDG/SAF #: H1392/B01-084

W.O. #: 11343-606-001-9999-00
Date Received: 06-20-2001

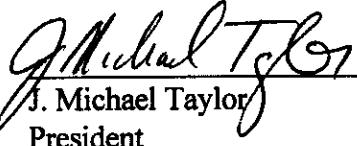
GC/MS VOLATILE

One (1) soil sample was collected on 06-15-2001.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 06-23-2001.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The sample was analyzed within required holding time.
3. Non-target compounds were not detected in the sample.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The method blank contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than 2x the CRQL.
8. Internal standard area and retention time criteria were met.
9. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."



J. Michael Taylor
President
Lionville Laboratory Incorporated

7/27/01
Date

som\group\data\voa\tnu-hanford\0106-112.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

GLOSSARY OF VOA DATA

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF VOA DATA

ABBREVIATIONS

- BS** = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD** = Indicates blank spike duplicate.
- MS** = Indicates matrix spike.
- MSD** = Indicates matrix spike duplicate.
- DL** = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA** = Not Applicable.
- DF** = Dilution Factor.
- NR** = Not Required.
- SP, Z** = Indicates Spiked Compound.



TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

- MP** - Missed Peak: manually added peak not found by automatic quantitation program.
- PA** - Peak Assignment: quantitation report was changed to reflect correct peak assignment.
- RI** - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP** - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB** - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI** - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

RFW Batch Number: 0106L112

Client: TNUHANFORD B01-084 H1392 Work Order: 11343606001 Page: 1a

Lionville Laboratory, Inc.
Volatile by GC/MS, HSL List

Report Date: 07/17/01 14:27

	Cust ID:	B12632	B12632	B12632	VBLKFV	VBLKFV BS
Sample Information	RFW#:	001	001 MS	001 MSD	01LVX179-MB1	01LVX179-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.06	1.04	0.980	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Toluene-d8	112 %	113 %	106 %	94 %	96 %
	Bromofluorobenzene	98 %	100 %	94 %	90 %	95 %
	1,2-Dichloroethane-d4	88 %	91 %	84 %	71 %	76 %
	Chloromethane	11 U	11 U	10 U	10 U	10 U
	Bromomethane	11 U	11 U	10 U	10 U	10 U
	Vinyl Chloride	11 U	11 U	10 U	10 U	10 U
	Chloroethane	11 U	11 U	10 U	10 U	10 U
	Methylene Chloride	15 B	15 B	14 B	6	7 B
	Acetone	11 U	11 U	10 U	3 J	10 U
	Carbon Disulfide	6 U	6 U	5 U	5 U	5 U
	1,1-Dichloroethene	6 U	95 %	101 %	5 U	84 %
	1,1-Dichloroethane	6 U	6 U	5 U	5 U	5 U
	1,2-Dichloroethene (total)	6 U	6 U	5 U	5 U	5 U
	Chloroform	6 U	6 U	5 U	5 U	5 U
	1,2-Dichloroethane	6 U	6 U	5 U	5 U	5 U
	2-Butanone	11 U	11 U	10 U	10 U	10 U
	1,1,1-Trichloroethane	6 U	6 U	5 U	5 U	5 U
	Carbon Tetrachloride	6 U	6 U	5 U	5 U	5 U
	Bromodichloromethane	6 U	6 U	5 U	5 U	5 U
	1,2-Dichloropropene	6 U	6 U	5 U	5 U	5 U
	cis-1,3-Dichloropropene	6 U	6 U	5 U	5 U	5 U
	Trichloroethene	6 U	106 %	102 %	5 U	105 %
	Dibromochloromethane	6 U	6 U	5 U	5 U	5 U
	1,1,2-Trichloroethane	6 U	6 U	5 U	5 U	5 U
	Benzene	6 U	107 %	100 %	5 U	96 %
	Trans-1,3-Dichloropropene	6 U	6 U	5 U	5 U	5 U
	Bromoform	6 U	6 U	5 U	5 U	5 U
	4-Methyl-2-pentanone	11 U	11 U	10 U	10 U	10 U
	2-Hexanone	11 U	11 U	10 U	10 U	10 U
	Tetrachloroethene	6 U	6 U	5 U	5 U	5 U
	1,1,2,2-Tetrachloroethane	6 U	6 U	5 U	5 U	5 U
	Toluene	6 U	113 %	107 %	5 U	100 %

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0106L112 Client: TNUHANFORD B01-084 H1392 Work Order: 11343606001 Page: 1b

Cust ID: B12632 B12632 B12632 VBLKFV VBLKFV BS

RFW#: 001 001 MS 001 MSD 01LVX179-MB1 01LVX179-MB1

Chlorobenzene	6 U	111 %	100 %	5 U	102 %
Ethylbenzene	6 U	6 U	5 U	5 U	5 U
Styrene	6 U	6 U	5 U	5 U	5 U
Xylene (total)	6 U	6 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Custody Transfer Record/Lab Work Request Page 1 of 1

0106112

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS



Client TRU-Hanford B01-084

Est. Final Proj. Sampling Date

Project # 11343-600-061-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager QJ

QC Spec Del Std TAT 30 day

Date Rec'd (D+L07-01) Date Due 7/20/01

Refrigerator #		A	B	C	D
#Type Container	Liquid				
	Solid	1Ag, 1PG		1Ag	1Ag
Volume	Liquid				
	Solid	250 250		500	250
Preservatives	-	-		-	-
	ORGANIC		INORG		
ANALYSES REQUESTED →	VOA	BNA	Pas/PCB	Herb	
	Metal	CN			

MATRIX CODES:

S - Soil
SE - Sediment
SO - Solid
SL - SludgeW - Water
O - Oil
A - Air
DS - Drum
Solids
DL - Drum
Liquids
L - EP/TCPL
Leachate
WI - Wipe
X - Other
F - Fish

Special Instructions: SaF B01-084

Relinquished by	Received by	Date	Time
John E.	V. Koenig 6/01 0925		

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

DATE/REVISIONS:

Mrt ① 1. Al, Ag, Ba, Br, Ca, Cd, Co, Cr, Cu, Fe, K,
↓ 2. Mg, Mn, Na, Ni, Sb, V, Zn, Pb, Hg

3. _____
 4. _____
 5. _____
 6. _____

Lionville Laboratory Use Only

Samples were:

1) Shipped _____ or
Hand Delivered _____Altbill # 201101

2) Ambient or Chilled

3) Received In Good Condition or N4) Samples Properly Preserved or N5) Received Within Holding Times or NTamper Resistant Seal was:
1) Present on Outer Package or N2) Unbroken on Outer Package or N3) Present on Sample or N4) Unbroken on Sample or NCOC Record Present Upon Sample Rec't or NCooler Temp. 60 °CDiscrepancies Between
Samples Labels and
COC Record? Y or N
NOTES: 4235 7954 5248

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B01-084-29

Page 1 of 1

Collector Fahlberg	Company Contact C W Miller	Telephone No. 372-9274	Project Coordinator TRENT, SJ	Price Code 8N	Data Turnaround 45 Days
Project Designation Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location 200-Z-9		SAF No. B01-084	Air Quality <input type="checkbox"/>	
Ice Chest No. <i>ER C96 665110fz</i>	Field Logbook No. EL1517-2	COA R20ZP2DP61	Method of Shipment Fed EX		

Shipped To
TMA/RECRA

Offsite Property No.

A 010434

Bill of Lading/Air Bill No.

42357954-5204

POSSIBLE SAMPLE HAZARDS/REMARKS

<2000 PCU/g per BHI-01609

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
Type of Container	aG	aG	aG	aG	aG
No. of Container(s)	1	1	1	1	1
Volume	250mL	250mL	250mL	500mL	1000mL

Special Handling and/or Storage

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	RT 6-15-01	RT 6-15-01	RT 6-15-01	RT 6-15-01	RT 6-15-01	RT 6-15-01
B12632	SOIL	6-15-01	1740	X	X	X	X							

CHAIN OF POSSESSION

Sign/Print Names

SPECIAL INSTRUCTIONS

See SAF Comment Concerning Pu Analysis

Matrix *

Relinquished By <i>R. Fahlberg</i>	Date/Time 6-15-01	Received By <i>R. Fahlberg</i>	Date/Time 6-15-01
Relinquished By <i>R. Thorson</i>	Date/Time 6-19-01	Received By <i>R. Thorson</i>	Date/Time 6-19-01
Relinquished By <i>R. Thorson</i>	Date/Time 6-19-01	Received By <i>R. Thorson</i>	Date/Time 6-19-01
Relinquished By <i>F. E. Spangler</i>	Date/Time 6/20/01 0935	Received By <i>F. E. Spangler</i>	Date/Time 6/20/01 0935
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

Samples stored in Ref. # *3728* at the 3728Shipping Facility on *6/15/01*.

Collector not available to relinquish samples

on *6/19/01* for shipment.

S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
W=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time



Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1392

DATE RECEIVED: 06/20/01

LVL LOT #: 0106L112

CLIENT ID / ANALYSIS	LVL #	MTX	PREP #	COLLECTION EXTR/PREP	ANALYSIS
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B12632

% SOLIDS	001	S	01L%S076	06/15/01	06/21/01	06/22/01
% SOLIDS	001 REP	S	01L%S076	06/15/01	06/21/01	06/22/01
OIL & GREASE BY GRAV	001	S	01LOG025	06/15/01	07/12/01	07/12/01
OIL AND GREASE BY GR	001 REP	S	01LOG025	06/15/01	07/12/01	07/12/01
OIL AND GREASE BY GR	001 MS	S	01LOG025	06/15/01	07/12/01	07/12/01

LAB QC:

OIL & GREASE BY GRAV	MB1	S	01LOG025	N/A	07/12/01	07/12/01
OIL AND GREASE BY GR	MB1 BS	S	01LOG025	N/A	07/12/01	07/12/01
OIL AND GREASE BY GR	MB1 BSD	S	01LOG025	N/A	07/12/01	07/12/01



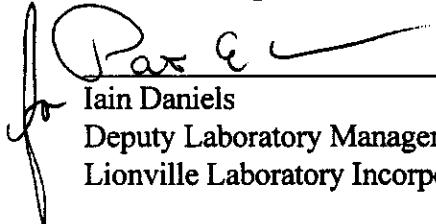
Analytical Report

Client: TNU-HANFORD B01-084 H1392
LVL#: 0106L112

W.O.#: 11343-606-001-9999-00
Date Received: 06-20-01

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The sample was prepared and analyzed in accordance with the methods checked on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature was recorded on the chain of custody.
5. The method blank for Oil and Grease was within the method criteria.
6. The Laboratory Control Samples (LCS) for Oil and Grease were within the laboratory control limits.
7. The matrix spike recovery for Oil and Grease was within the 75-125% control limits.
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated

07-26-01
Date

njpi06-112

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 11 pages.

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	— D2216-80		
% Moisture	— D2216-80		— ILMO4.0 (e)
% Solids	✓ D2216-80		— ILMO4.0 (e)
% Volatile Solids	— D2216-80		
ASTM Extraction in Water	— D3987-81/85		
BTU	— D240-87		
CEC		9081	— c
Chromium VI		3060A/7196A	
Corrosivity <u> </u> by coupon <u> </u> by pH		1110(mod) 9045C	
Cyanide, Total		9010B	— ILMO4.0 (e)
Cyanide, Reactive		Section 7.3/9014	
Halides, Extractable Organic		9020B	— EPA 600/4/84-008
Halides, Total		9020B	— EPA 600/4/84-008
EP Toxicity		1310A	
Flash Point		1010	
Ignitability		1010	
Oil & Grease	✓ 9071A		
Carbon, Total Organic		9060	— Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	— D240-87(mod)	5050	
Petroleum Hydrocarbons, Total Recoverable		9071	— EPA 418.1
pH, Soil		9045C	
Sulfide, Reactive		Section 7.3/9030B	
Sulfide		9030B(mod)	
Specific Gravity	— D1429-76C/	D5057-90	
Sulfur, Total		9056	
Synthetic Preparation Leach		1312	
Paint Filter		9095A	
Other:	Method:		
Other:	Method		

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

- MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
 - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
 - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
 - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
 - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
 - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
 - f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/18/01

CLIENT: TNUHANFORD B01-084 H1392

LVL LOT #: 0106L112

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B12632	% Solids	98.2	%	0.01	1.0
		Oil & Grease Gravimetri	136	u	MG/KG	136

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/18/01

CLIENT: TNUHANFORD B01-084 H1392
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0106L112

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	01LOG025-MB1	Oil & Grease Gravimetri	133	u MG/KG	133	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/18/01

CLIENT: TNUHANFORD B01-084 H1392

LVL LOT #: 0106L112

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED	INITIAL	SPIKED	DILUTION	
			SAMPLE	RESULT	AMOUNT	%RECOV	
-001	B12632	Oil & Grease Gravimetr	6500	136	u 7500	86.7	1.0
BLANK10	01LOG025-MB1	Oil & Grease Gravimetr	6720	133	u 7360	91.3	1.0
		Oil & Grease - Grav M	6830	133	u 7470	91.4	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/18/01

CLIENT: TNUHANFORD B01-084 H1392
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0106L112

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR(REF)
			RESULT	REPLICATE	RPD	
-001REP	B12632	% Solids	98.2	98.3	0.10	1.0
		Oil & Grease Gravimetri	136	u	136	NC

Lionville Laboratory Use Only

0106112

Custody Transfer Record/Lab Work Request Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TRU-Hanford B01-084

Est. Final Proj. Sampling Date

Project # 11343-C000-061-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager QJQC Spec Del Std TAT 30 dayDate Rec'd (D+10/20/01) Date Due 7/20/01

MATRIX CODES:

S - Soil

SE - Sediment

SO - Solid

SL - Sludge

W - Water

O - Oil

A - Air

DS - Drum

Solids

DL - Drum

Liquids

L - EP/TCLP

Leachate

WI - Wipe

X - Other

F - Fish

Lab ID

Client ID/Description

Matrix QC Chosen (v)

MS

MSD

			Refrigerator #			A	B	C	D	
			#/Type Container	Liquid						
				Solid	1AG 1AG				1AG 1AG	
			Volume	Liquid						
				Solid	250 250				500 250	
			Preservatives	- -					- -	
				ORGANIC			INORG			
			ANALYSES REQUESTED	VOA	BNA	Pest PCB	Herb	Metal	CN	
Lionville Laboratory Use Only										

Special Instructions: Saf B01-084

DATE/REVISIONS:

mct① 1. Al, Ag, Ba, Br, Ca, Cd, Co, Cr, Cu, Fe, K,
↓ 2. Mg, Mn, Na, Ni, Sb, V, Zn, Pb, Hg
 3. _____
 4. _____
 5. _____
 6. _____

Lionville Laboratory Use Only

Samples were:

1) Shipped _____ or Hand Delivered Airbill # 202610

2) Ambient or Chilled

3) Received in Good Condition or N4) Samples Properly Preserved or N5) Received Within Holding Times or NCOC Record Present Upon Sample Rec'd or NCooler Temp. 60 °C

Relinquished by	Received by	Date	Time
<u>Tulie</u>	<u>V. Kennedy</u>	<u>6/20/01</u>	<u>0905</u>

Relinquished by	Received by	Date	Time

COMPOSITE WASTE **ORIGINAL**
REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N

NOTES:

4235 7954 5248

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B01-084-29	Page 1 of 1
Collector Fahlberg	Company Contact C W Miller	Telephone No. 372-9274		Project Coordinator TRENT, SJ		Price Code 8N	Data Turnaround 45 Days	
Project Designation Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location 200-Z-9							
Ice Chest No. <i>ERC 96 465110fz</i>	Field Logbook No. EL1517-2	COA R20ZP2DP61		Method of Shipment Fed EX				
Shipped To TMARECRA	Offsite Property No. <i>A 010434</i>			Bill of Lading/Air Bill No. <i>42351954-5204</i>				
POSSIBLE SAMPLE HAZARDS/REMARKS <i><2000 PCBs per BH1-01609</i>		Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
		Type of Container	aG	aG	aG	aG	aG	
		No. of Container(s)	1	1	1	1	1	
		Volume	250mL	250mL	250mL	500mL	1000mL	
SAMPLE ANALYSIS				Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions. <i>RT 6-14-01</i>
Sample No.	Matrix *	Sample Date	Sample Time					
B12632	SOIL	6-15-01	1740	X	X	X	X	
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS
Relinquished By <i>R. Fahlberg</i>	Date/Time 6-15-01	Received By <i>STORER IN 3728</i>	Date/Time 1900	See SAF Comment Concerning Pu Analysis				Matrix *
Relinquished By <i>R. Fahlberg</i>	Date/Time 6-15-01	Received By <i>R. Thoron</i>	Date/Time 1900	(1) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate) (2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lead); Mercury - 7470 - (CV) (3) Gamma Spectroscopy (Cesium-137, Cobalt-60, Gamma Spec. Add-on (Antimony-113), Iodine-131, Platinum, Americium-241, Neptunium-237, Plutonium-244, Strontium-89, 90, Total Sr)				<i>RT 6-14-01</i>
Relinquished By <i>R. Thoron</i>	Date/Time 6-19-01	Received By <i>F-G Dex</i>	Date/Time					
Relinquished By <i>F-G Dex</i>	Date/Time 6/20/01 0935	Received By <i>W. Heng</i>	Date/Time 6/20/01 0935					
Relinquished By	Date/Time	Received By	Date/Time					
Relinquished By	Date/Time	Received By	Date/Time					
LABORATORY SECTION	Received By	Title						Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By						Date/Time

Figure 1. Sample Check-in List

Date/Time Received: 6/20/01 09:35

SDG#: 0106L112

Work Order Number: _____ SAW# _____

Shipping Container ID: _____ Chain of Custody #: _____

1. Custody Seals on shipping container intact? Yes No
2. Custody Seals dated and signed? Yes No
3. Chain-of-Custody record present? Yes No
4. Cooler temperature 60
5. Vermiculite/packing materials is Wet Dry
6. Number of samples in shipping container: 14
7. Sample holding times exceeded? Yes No

8. Samples have:	<input type="checkbox"/> tape	<input type="checkbox"/> hazard labels
	<input checked="" type="checkbox"/> custody seals	<input type="checkbox"/> appropriate sample labels
9. Samples are:	<input checked="" type="checkbox"/> in good condition	<input type="checkbox"/> leaking
	<input type="checkbox"/> broken	<input type="checkbox"/> have air bubbles

10. Were any anomalies identified in sample receipt? Yes No
11. Description of anomalies (include sample numbers):

Sample Custodian/Laboratory: John M. S. Date: 6/20/01

Telephoned to: _____ On _____ By _____



Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1392

DATE RECEIVED: 06/20/01

LVL LOT # :0106L112

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12632						
SILVER, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
SILVER, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
SILVER, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
ALUMINUM, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
ALUMINUM, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
ALUMINUM, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
BARIUM, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
BARIUM, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
BARIUM, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
BERYLLIUM, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
BERYLLIUM, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
BERYLLIUM, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
CALCIUM, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
CALCIUM, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
CALCIUM, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
CADMIUM, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
CADMIUM, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
CADMIUM, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
COBALT, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
COBALT, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
COBALT, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
CHROMIUM, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
CHROMIUM, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
CHROMIUM, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
COPPER, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
COPPER, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
COPPER, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
IRON, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
IRON, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
IRON, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
MERCURY, TOTAL	001	S	01C0191	06/15/01	06/27/01	06/27/01
MERCURY, TOTAL	001 REP	S	01C0191	06/15/01	06/27/01	06/27/01
MERCURY, TOTAL	001 MS	S	01C0191	06/15/01	06/27/01	06/27/01
POTASSIUM, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
POTASSIUM, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD B01-084 H1392

DATE RECEIVED: 06/20/01

LVL LOT # :0106L112

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
POTASSIUM, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
MAGNESIUM, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
MAGNESIUM, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
MAGNESIUM, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
MANGANESE, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
MANGANESE, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
MANGANESE, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
SODIUM, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
SODIUM, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
SODIUM, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
NICKEL, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
NICKEL, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
NICKEL, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
LEAD, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
LEAD, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
LEAD, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
ANTIMONY, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
ANTIMONY, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
ANTIMONY, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
VANADIUM, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
VANADIUM, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
VANADIUM, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01
ZINC, TOTAL	001	S	01L0393	06/15/01	07/05/01	07/06/01
ZINC, TOTAL	001 REP	S	01L0393	06/15/01	07/05/01	07/06/01
ZINC, TOTAL	001 MS	S	01L0393	06/15/01	07/05/01	07/06/01

LAB QC:

SILVER LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
SILVER, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
ALUMINUM LABORTORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
ALUMINUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
BARIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
BARIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
BERYLLIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
BERYLLIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
CALCIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
CALCIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD B01-084 H1392

DATE RECEIVED: 06/20/01

LVL LOT # :0106L112

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
CADMIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
COBALT LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
COBALT, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
CHROMIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
CHROMIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
COPPER LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
COPPER, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
IRON LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
IRON, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
MERCURY LABORATORY	LC1 BS	S	01C0191	N/A	06/27/01	06/27/01
MERCURY, TOTAL	MB1	S	01C0191	N/A	06/27/01	06/27/01
POTASSIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
POTASSIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
MAGNESIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
MAGNESIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
MANGANESE LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
MANGANESE, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
SODIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
SODIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
NICKEL LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
NICKEL, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
LEAD LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
LEAD, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
ANTIMONY LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
ANTIMONY, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
VANADIUM LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
VANADIUM, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01
ZINC LABORATORY	LC1 BS	S	01L0393	N/A	07/05/01	07/06/01
ZINC, TOTAL	MB1	S	01L0393	N/A	07/05/01	07/06/01



LIONVILLE LABORATORY INC.



Analytical Report

Client: TNU-HANFORD B01-084
LVL#: 0106L112
SDG/SAF#: H1392/B01-084

W.O.#: 11343-606-001-9999-00
Date Received: 06-20-01

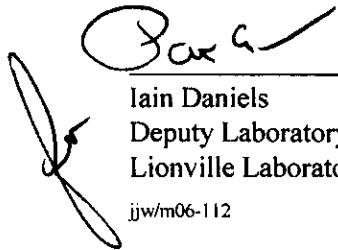
METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 soil sample.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
10. The matrix spike (MS) recoveries for 6 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration levels, due to high concentrations of the following analytes:

<u>Sample ID</u>	<u>Element</u>	<u>PDS Concentration (ppb)</u>	<u>PDS % Recovery</u>
B12632	Aluminum	20,000	109.3
	Chromium	200	101.2
	Iron	20,000	96.5
	Manganese	1000	101.2
	Nickel	200	106.5
	Antimony	200	108.1

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



Iain Daniels
Deputy Laboratory Manager
Lionville Laboratory Incorporated
jjw/m06-112

07-26-01
Date



METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 0106L11Z

Leaching Procedure: 1310 1311 1312 Other: _____

CLP Metals Digestion and Analysis Methods: ILM03.0 ILM04.0

Metals Digestion Methods: 3005A 3010A 3015 3020A 3050B 3051 200.7 SS17
 Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u>✓</u> 6010B	<u>200.7</u>			<u>99</u>
Antimony	<u>✗</u> 6010B <u>7041</u> ⁵	<u>200.7</u> <u>204.2</u>			<u>99</u>
Arsenic	<u>✓</u> 6010B <u>7060A</u> ⁵	<u>200.7</u> <u>206.2</u>	<u>3113B</u>		<u>99</u>
Barium	<u>✗</u> 6010B	<u>200.7</u>			<u>99</u>
Beryllium	<u>✗</u> 6010B	<u>200.7</u>			<u>99</u>
Bismuth	<u>✓</u> 6010B ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>
Boron	<u>✓</u> 6010B	<u>200.7</u>			<u>99</u>
Cadmium	<u>✗</u> 6010B <u>7131A</u> ⁵	<u>200.7</u> <u>213.2</u>			<u>99</u>
Calcium	<u>✗</u> 6010B	<u>200.7</u>			<u>99</u>
Chromium	<u>✗</u> 6010B <u>7191</u> ⁵	<u>200.7</u> <u>218.2</u>			<u>SS17</u>
Cobalt	<u>✗</u> 6010B	<u>200.7</u>			<u>99</u>
Copper	<u>✓</u> 6010B <u>7211</u> ⁵	<u>200.7</u> <u>220.2</u>			<u>99</u>
Iron	<u>✗</u> 6010B	<u>200.7</u>			<u>99</u>
Lead	<u>✗</u> 6010B <u>7421</u> ⁵	<u>200.7</u> <u>239.2</u>	<u>3113B</u>		<u>99</u>
Lithium	<u>✓</u> 6010B <u>7430</u> ⁴	<u>200.7</u>		<u>1620</u>	<u>99</u>
Magnesium	<u>✗</u> 6010B	<u>200.7</u>			<u>99</u>
Manganese	<u>✗</u> 6010B	<u>200.7</u>			<u>99</u>
Mercury	<u>✓</u> 7470A ³ <u>✗</u> 7471A ³	<u>245.1</u> ² <u>245.5</u> ²			<u>99</u>
Molybdenum	<u>✓</u> 6010B	<u>200.7</u>			<u>99</u>
Nickel	<u>✗</u> 6010B	<u>200.7</u>			<u>99</u>
Potassium	<u>✗</u> 6010B <u>7610</u> ⁴	<u>200.7</u> <u>258.1</u> ⁴			<u>99</u>
Rare Earths	<u>✓</u> 6010B ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>
Selenium	<u>✓</u> 6010B <u>7740</u> ⁵	<u>200.7</u> <u>270.2</u>	<u>3113B</u>		<u>99</u>
Silicon	<u>✓</u> 6010B ¹	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silica	<u>✓</u> 6010B	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silver	<u>✓</u> 6010B <u>7761</u> ⁵	<u>200.7</u> <u>272.2</u>			<u>99</u>
Sodium	<u>✗</u> 6010B <u>7770</u> ⁴	<u>200.7</u> <u>273.1</u> ⁴			<u>99</u>
Strontium	<u>✓</u> 6010B	<u>200.7</u>			<u>99</u>
Thallium	<u>✓</u> 6010B <u>7841</u> ⁵	<u>200.7</u> <u>279.2</u> <u>200.9</u>			<u>99</u>
Tin	<u>✓</u> 6010B	<u>200.7</u>			<u>99</u>
Titanium	<u>✓</u> 6010B	<u>200.7</u>			<u>99</u>
Uranium	<u>✓</u> 6010B ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>
Vanadium	<u>✗</u> 6010B	<u>200.7</u>			<u>99</u>
Zinc	<u>✗</u> 6010B	<u>200.7</u>			<u>99</u>
Zirconium	<u>✓</u> 6010B ¹	<u>200.7</u> ¹		<u>1620</u>	<u>99</u>

Other: _____

Method: _____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

*** =** Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 07/09/01

CLIENT: TNUHANFORD B01-084 H1392
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0106L112

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR	
-001	B12632	Silver, Total	0.10	u	MG/KG	0.10	1.0
		Aluminum, Total	4110		MG/KG	1.3	1.0
		Barium, Total	57.7		MG/KG	0.02	1.0
		Beryllium, Total	0.27		MG/KG	0.02	1.0
		Calcium, Total	2270		MG/KG	0.82	1.0
		Cadmium, Total	0.03	u	MG/KG	0.03	1.0
		Cobalt, Total	4.8		MG/KG	0.08	1.0
		Chromium, Total	77.5		MG/KG	0.09	1.0
		Copper, Total	9.1		MG/KG	0.07	1.0
		Iron, Total	12800		MG/KG	1.6	1.0
		Mercury, Total	0.02	u	MG/KG	0.02	1.0
		Potassium, Total	932		MG/KG	3.6	1.0
		Magnesium, Total	2720		MG/KG	0.90	1.0
		Manganese, Total	199		MG/KG	0.01	1.0
		Sodium, Total	445		MG/KG	0.17	1.0
		Nickel, Total	45.6		MG/KG	0.12	1.0
		Lead, Total	3.2		MG/KG	0.26	1.0
		Antimony, Total	0.19	u	MG/KG	0.19	1.0
		Vanadium, Total	24.2		MG/KG	0.07	1.0
		Zinc, Total	25.6		MG/KG	0.03	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 07/09/01

CLIENT: TNUHANFORD B01-084 H1392
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0106L112

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	01L0393-MB1	Silver, Total	0.10	u MG/KG	0.10	1.0
		Aluminum, Total	1.3	u MG/KG	1.3	1.0
		Barium, Total	0.04	u MG/KG	0.02	1.0
		Beryllium, Total	0.02	u MG/KG	0.02	1.0
		Calcium, Total	1.6	u MG/KG	0.81	1.0
		Cadmium, Total	0.03	u MG/KG	0.03	1.0
		Cobalt, Total	0.08	u MG/KG	0.08	1.0
		Chromium, Total	0.09	u MG/KG	0.09	1.0
		Copper, Total	0.07	u MG/KG	0.07	1.0
		Iron, Total	1.6	u MG/KG	1.6	1.0
		Potassium, Total	3.5	u MG/KG	3.5	1.0
		Magnesium, Total	0.88	u MG/KG	0.88	1.0
		Manganese, Total	0.03	u MG/KG	0.01	1.0
		Sodium, Total	2.4	u MG/KG	0.17	1.0
		Nickel, Total	0.12	u MG/KG	0.12	1.0
		Lead, Total	0.26	u MG/KG	0.26	1.0
		Antimony, Total	0.19	u MG/KG	0.19	1.0
		Vanadium, Total	0.07	u MG/KG	0.07	1.0
		Zinc, Total	0.05	u MG/KG	0.03	1.0
BLANK1	01C0191-MB1	Mercury, Total	0.02	u MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 07/09/01

CLIENT: TNUHANFORD S01-084 H1392
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0106L112

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B12632	Silver, Total	4.8	0.10u	5.1	94.1	1.0
		Aluminum, Total	4610	4110	204	245.9*	1.0
		Barium, Total	244	57.7	204	91.6	1.0
		Beryllium, Total	5.3	0.27	5.1	98.6	1.0
		Calcium, Total	4700	2270	2540	95.4	1.0
		Cadmium, Total	4.8	0.03u	5.1	94.1	1.0
		Cobalt, Total	52.2	4.8	50.9	93.1	1.0
		Chromium, Total	75.3	77.5	20.4	-11.	1.0
		Copper, Total	33.3	9.1	25.5	94.9	1.0
		Iron, Total	11600	12800	102	-1200. *	1.0
		Mercury, Total	0.19	0.02u	0.16	115.2	1.0
		Potassium, Total	3490	932	2540	100.6	1.0
		Magnesium, Total	5110	2720	2540	93.7	1.0
		Manganese, Total	232	199	50.9	66.2	1.0
		Sodium, Total	2830	445	2540	93.8	1.0
		Nickel, Total	83.4	45.6	50.9	74.3	1.0
		Lead, Total	51.0	3.2	50.9	93.9	1.0
		Antimony, Total	30.9	0.19u	50.9	60.7	1.0
		Vanadium, Total	69.4	24.2	50.9	88.8	1.0
		Zinc, Total	73.0	25.6	50.9	93.1	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 07/09/01

CLIENT: TNUHANFORD B01-084 H1392

LVL LOT #: 0106L112

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE	RPD	
-001REP	B12632	Silver, Total	0.10u	0.10u	NC	1.0
		Aluminum, Total	4110	3710	10.2	1.0
		Barium, Total	57.7	50.6	13.1	1.0
		Beryllium, Total	0.27	0.25	9.4	1.0
		Calcium, Total	2270	2000	12.9	1.0
		Cadmium, Total	0.03u	0.03u	NC	1.0
		Cobalt, Total	4.8	4.2	13.3	1.0
		Chromium, Total	77.5	68.1	12.9	1.0
		Copper, Total	9.1	8.4	8.0	1.0
		Iron, Total	12800	10400	21.2	1.0
		Mercury, Total	0.02u	0.01u	NC	1.0
		Potassium, Total	932	880	5.8	1.0
		Magnesium, Total	2720	2430	11.4	1.0
		Manganese, Total	199	168	16.5	1.0
		Sodium, Total	445	404	9.8	1.0
		Nickel, Total	45.6	40.8	11.1	1.0
		Lead, Total	3.2	2.9	9.8	1.0
		Antimony, Total	0.19u	0.19u	NC	1.0
		Vanadium, Total	24.2	19.0	24.1	1.0
		Zinc, Total	25.6	23.3	9.4	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 07/09/01

CLIENT: TNUHANFORD B01-084 H1392
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0106L112

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	%RECOV
			SAMPLE	AMOUNT	
LCS1	01L0393-LC1	Silver, LCS	47.5	50.0	95.0
		Aluminum, LCS	485	500	96.9
		Barium, LCS	483	500	96.5
		Beryllium, LCS	24.3	25.0	97.2
		Calcium, LCS	2400	2500	96.0
		Cadmium, LCS	24.3	25.0	97.2
		Cobalt, LCS	246	250	98.4
		Chromium, LCS	49.9	50.0	99.8
		Copper, LCS	122	125	97.6
		Iron, LCS	496	500	99.2
		Potassium, LCS	2390	2500	95.7
		Magnesium, LCS	2400	2500	95.6
		Manganese, LCS	75.7	75.0	100.9
		Sodium, LCS	2320	2500	92.9
		Nickel, LCS	193	200	96.7
		Lead, LCS	239	250	95.5
		Antimony, LCS	286	300	95.4
		Vanadium, LCS	253	250	101.2
		Zinc, LCS	95.5	100	95.5
LCS1	01C0191-LC1	Mercury, LCS	2.5	2.5	MG/KG 102.3

Custody Transfer Record/Lab Work Request Page 1 of 1

0106L112

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client	TNU-Hanford Bo1-084		
Est. Final Proj. Sampling Date			
Project #	11343 (060-061-9999-00)		
Project Contact/Phone #			
Lionville Laboratory Project Manager	(Q)		
QC Spec	Det	Std	TAT 30 day
Date Rec'd	(D+10m-01)	Date Due	7/20/01

Refrigerator #		A	B	C	D
#/Type Container	Liquid				
	Solid	1Pkg	1Pkg		1Pkg
Volume	Liquid				
	Solid	250	250	500	250
Preservatives		-	-	-	-
	ORGANIC			INORG	
ANALYSES REQUESTED	VOA	BNA	Pest/PCB	Herb	Metal
					CN

MATRIX CODES:	Lab ID	Client ID/Description		Matrix QC Chosen (✓)	Date Collected	Time Collected	Lionville Laboratory Use Only						
							O	E	H	S	X	O	G
		001	B161032		✓	✓	S	061501	1740	✓	✓	✓	TO GR
MS	MSD												
S - Soil													
SE - Sediment													
SO - Solid													
SL - Sludge													
W - Water													
O - Oil													
A - Air													
DS - Drum													
DL - Drum													
L - Liquids													
L - EP/TCLP Leachate													
WI - Wipe													
X - Other													
F - Fish													

Special Instructions: SaF Bo1-084

DATE/REVISIONS:

mct(1) 1. Al, Ag, Ba, Br, Ca, Cd, Co, Cr, Cu, Fe, K,
 2. Mg, Mn, Na, Ni, Sb, V, Zn, Pb, Hg

3.
4.
5.
6.

Lionville Laboratory Use Only

Samples were:

- 1) Shipped _____ or Hand Delivered _____

Airbill # *2nd flight*

- 2) Ambient or Chilled

- 3) Received in Good Condition or N

- 4) Samples Properly Preserved or N

- 5) Received Within Holding Times or N

Temper Resistant Seal was:
 1) Present on Outer Package or N

2) Unbroken on Outer Package or N

3) Present on Sample or N

4) Unbroken on Sample or N

COC Record Present Upon Sample Rec't or N

Cooler Temp. 6 °C

Relinquished by	Received by	Date	Time
<i>Jed E</i>	<i>V. Berndt 6/10/01 0905</i>		

Relinquished by	Received by	Date	Time

COMPOSITE
WASTE ORIGINAL
REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or N			
NOTES: 4235 7954 5248			

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B01-084-29	Page 1 of 1		
ector hilberg		Company Contact C W Miller		Telephone No. 372-9274		Project Coordinator TRENT, SJ		Price Code 8N	Data Turnaround	
ect Designation 9 Trench Well Deepening and Characterization - Soil		Sampling Location 200-Z-9				SAF No. B01-084		Air Quality <input type="checkbox"/>	45 Days	
Chest No. <i>ERC 96 465110fz</i>		Field Logbook No. EL1517-2		COA R20ZP2DP61		Method of Shipment Fed EX				
pped To MAIRECRA		Offsite Property No. <i>A010434</i>		Bill of Lading/Air Bill No. <i>42357954-5204</i>						
POSSIBLE SAMPLE HAZARDS/REMARKS <i>-2000 PL/1g per BH1-01609</i>		Special Handling and/or Storage	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None		
Type of Container	aG		aG	aG	aG	aG				
No. of Container(s)	1		1	1	1	1				
Volume	250mL		250mL	250mL	500mL	1000mL				
SAMPLE ANALYSIS				Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time							
12632	SOIL	6-15-01	1740	X	X	X	X			
CHAIN OF POSSESSION				Sign/Print Names					Matrix *	
linquished By <i>R. F. Miller</i>	Date/Time <i>6-15-01</i>	Received By <i>STORED IN 3728</i>	Date/Time <i>6-15-01</i>	SPECIAL INSTRUCTIONS See SAF Comment Concerning Pu Analysis					S=Soil SE=Sediment SO=Solid S=Sludge W=Water O=Oil A=Air DS=Dust Solids DL=Dust Liquids T=Time WI=Wipe L=Liquid V=Vegetation X=Other	
linquished By <i>P. Remond</i>	Date/Time <i>6-15-01</i>	Received By <i>R. F. Miller</i>	Date/Time <i>6-15-01</i>	(1) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate) (2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lead); Mercury - 7470 - (CV) (3) Gamma Spectroscopy (Cesium-137, Cobalt-60); Gamma Spec. Add-on (Antimony-136), Iodine-131, Plutonium, Americium-241, Neptunium-237, Plutonium-244, Strontium-89, 90, Total Sr						
linquished By <i>R. Thorson</i>	Date/Time <i>6-19-01</i>	Received By <i>R. Thorson</i>	Date/Time <i>6-19-01</i>	Samples stored in Ref. # <i>3728</i> at the 3728 Shipping Facility on <i>6-19-01</i> . Collector not available to relinquish samples on <i>6-19-01</i> for shipment.						
linquished By <i>F. E. Miller</i>	Date/Time <i>6/21/01 0935</i>	Received By <i>J. H. Henry</i>	Date/Time <i>6/20/01 0935</i>							
linquished By	Date/Time	Received By	Date/Time							
ABORATORY SECTION	Received By				Title					
INAL SAMPLE DISPOSITION	Disposal Method				Disposed By					

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B01-084 H1392

DATE RECEIVED: 06/20/01

LVL LOT # :0106L112

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B12632	001	S	01LE0734	06/15/01	06/21/01	07/05/01
B12632	001 MS	S	01LE0734	06/15/01	06/21/01	07/04/01
B12632	001 MSD	S	01LE0734	06/15/01	06/21/01	07/04/01

LAB QC:

SBLKAU	MB1	S	01LE0734	N/A	06/21/01	07/04/01
SBLKAU	MB1 BS	S	01LE0734	N/A	06/21/01	07/04/01





Client: TNU-HANFORD B01-084
LVL #: 0106L112
SDG/SAF #: H1392/B01-084

W.O. #: 11343-606-001-9999-00
Date Received: 06-20-2001

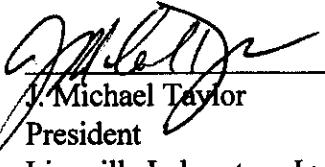
SEMIVOLATILE

One (1) soil sample was collected on 06-15-2001.

The sample and its associated QC samples were extracted on 06-21-2001 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL and client specified Tributylphosphate Semivolatile target compounds on 07-04,05-2001.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The sample was extracted and analyzed within required holding times.
3. Non-target compounds were detected in the sample.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. Two (2) of eleven (11) blank spike recoveries were outside EPA QC limits. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. The method blank contained the common laboratory contaminants Di-n-butylphthalate and Bis (2-Ethylhexyl) phthalate at levels less than the CRQL.
8. Internal standard area and retention time criteria were met.
9. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."



J. Michael Taylor
President
Lionville Laboratory Incorporated

7/27/01
Date

som\gorup\data\bna\tnu-hanford-0106-112.doc
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 2 pages.

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 01NS247

Initiator: John W. Smith Batch: 0106L112 Parameter: 0625X
 Date: 7/6/01 Samples: BS Matrix: Soil
 Client: TUW Hartford BCI-084 Method: SW846/MCAWW/CLP/ Prep Batch: 01LE0734
H1392

1. Reason for SDR

- | | | | |
|---|---|---|---|
| <input type="checkbox"/> a. COC Discrepancy | <input type="checkbox"/> Tech Profile Error | <input type="checkbox"/> Client Request | <input type="checkbox"/> Sampler Error on C-O-C |
| | <input type="checkbox"/> Transcription Error | <input type="checkbox"/> Wrong Test Code | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> b. General Discrepancy | <input type="checkbox"/> Missing Sample/Extract | <input type="checkbox"/> Container Broken | <input type="checkbox"/> Wrong Sample Pulled |
| | <input type="checkbox"/> Hold Time Exceeded | <input type="checkbox"/> Insufficient Sample | <input type="checkbox"/> Preservation Wrong |
| | <input type="checkbox"/> Improper Bottle Type | <input type="checkbox"/> Not Amenable to Analysis | <input type="checkbox"/> Label ID's Illegible |
| | <input type="checkbox"/> Received Past Hold | | |

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

Two spks fail law in BS. MS/msD meet criteria

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

- Re-log
- Entire Batch
- Following Samples: _____
- Re-leach
- Re-extract
- Re-digest
- Revise EDD
- Change Test Code to _____
- Place On/Take Off Hold (circle)

Other Description:

Report to Warak

4. Project Manager Instructions...signature/date:

- Concur with Proposed Action
- Disagree with Proposed Action; See Instruction
- Include in Case Narrative
- Client Contacted:
- Date/Person _____
- Add
- Cancel

Other Explanation:

5. Final Action...signature/date: 21/7/19/01

- Verified re-[log][leach][extract][digest][analysis] (circle)
- Included in Case Narrative
- Hard Copy COC Revised
- Electronic COC Revised
- EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route Distribution of Completed SDR

- X Initiator
- X Lab General Manager: M. Taylor
- X Project Mgr: Stone/Johnson/Haslett
- X Technical Mgr: Wesson/Daniels
- X QA (file): Alberts
- Data Management: Feldman
- Sample Prep: Beegle/Kiger

Route Distribution of Completed SDR

- Metals: Beegle
- Inorganic: Perrone
- GC/LC: Kiger
- MS: Rychlak/Layman
- Log-in: Keppel
- Admin: Soos
- Other: _____

GLOSSARY OF BNA DATA

DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- A** = Indicates that a TIC is a suspected aldol-condensation product.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF BNA DATA

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Suffix added to sample number to indicate that results are from a diluted analysis.
- NA = Not Applicable.
- DF = Dilution Factor.
- NR = Not Required.
- SP, Z = Indicates Spiked Compound.



TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

- MP** - Missed Peak: manually added peak not found by automatic quantitation program.
- PA** - Peak Assignment: quantitation report was changed to reflect correct peak assignment.
- RI** - Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP** - Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB** - Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI** - Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

RFW Batch Number: 0106L112

Lionville Laboratory, Inc.
Semivolatiles by GC/MS, Special List
Client: TNUHANFORD B01-084 H1392 Work Order: 11343606001

Report Date: 07/17/01 15:58

Page: 1a

	Cust ID:	B12632	B12632	B12632	SBLKAU	SBLKAU BS
Sample Information	RFW#:	001	001 MS	001 MSD	01LE0734-MB1	01LE0734-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	68 %	71 %	58 %	58 %	48 %
	2-Fluorobiphenyl	61 %	58 %	48 %	39 %	34 %
	p-Terphenyl-d14	70 %	86 %	70 %	67 %	56 %
	Phenol-d5	64 %	65 %	53 %	51 %	44 %
	2-Fluorophenol	58 %	57 %	46 %	51 %	39 %
	2,4,6-Tribromophenol	52 %	62 %	48 %	39 %	36 %
Phenol	Phenol	340 U	69 %	56 %	330 U	45 %
	bis(2-Chloroethyl)ether	340 U	340 U	330 U	330 U	330 U
	2-Chlorophenol	340 U	62 %	49 %	330 U	41 %
	1,3-Dichlorobenzene	340 U	340 U	330 U	330 U	330 U
	1,4-Dichlorobenzene	340 U	54 %	43 %	330 U	22 * %
	1,2-Dichlorobenzene	340 U	340 U	330 U	330 U	330 U
	2-Methylphenol	340 U	340 U	330 U	330 U	330 U
	2,2'-oxybis(1-Chloropropane)	340 U	340 U	330 U	330 U	330 U
	4-Methylphenol	340 U	340 U	330 U	330 U	330 U
	N-Nitroso-Di-n-propylamine	340 U	73 %	57 %	330 U	48 %
	Hexachloroethane	340 U	340 U	330 U	330 U	330 U
	Nitrobenzene	340 U	340 U	330 U	330 U	330 U
	Isophorone	340 U	340 U	330 U	330 U	330 U
	2-Nitrophenol	340 U	340 U	330 U	330 U	330 U
	2,4-Dimethylphenol	340 U	340 U	330 U	330 U	330 U
	bis(2-Chloroethoxy)methane	340 U	340 U	330 U	330 U	330 U
	2,4-Dichlorophenol	340 U	340 U	330 U	330 U	330 U
	1,2,4-Trichlorobenzene	340 U	52 %	44 %	330 U	24 * %
	Naphthalene	340 U	340 U	330 U	330 U	330 U
	4-Chloroaniline	340 U	340 U	330 U	330 U	330 U
	Hexachlorobutadiene	340 U	340 U	330 U	330 U	330 U
	4-Chloro-3-methylphenol	340 U	73 %	59 %	330 U	49 %
	2-Methylnaphthalene	340 U	340 U	330 U	330 U	330 U
	Hexachlorocyclopentadiene	340 U	340 U	330 U	330 U	330 U
	2,4,6-Trichlorophenol	340 U	340 U	330 U	330 U	330 U
	2,4,5-Trichlorophenol	840 U	840 U	820 U	830 U	830 U

*= Outside of EPA CLP QC limits.

Cust ID:	B12632	B12632	B12632	SBLKAU	SBLKAU BS
RFW#:	001	001 MS	001 MSD	01LE0734-MB1	01LE0734-MB1
2-Chloronaphthalene	340 U	340 U	330 U	330 U	330 U
2-Nitroaniline	840 U	840 U	820 U	830 U	830 U
Dimethylphthalate	340 U	340 U	330 U	330 U	330 U
Acenaphthylene	340 U	340 U	330 U	330 U	330 U
2,6-Dinitrotoluene	340 U	340 U	330 U	330 U	330 U
3-Nitroaniline	840 U	840 U	820 U	830 U	830 U
Acenaphthene	340 U	67 %	52 %	330 U	40 %
2,4-Dinitrophenol	840 U	840 U	820 U	830 U	830 U
4-Nitrophenol	840 U	77 %	60 %	830 U	41 %
Dibenzofuran	340 U	340 U	330 U	330 U	330 U
2,4-Dinitrotoluene	340 U	76 %	63 %	330 U	46 %
Diethylphthalate	340 U	340 U	330 U	330 U	330 U
4-Chlorophenyl-phenylether	340 U	340 U	330 U	330 U	330 U
Fluorene	340 U	340 U	330 U	330 U	330 U
4-Nitroaniline	840 U	840 U	820 U	830 U	830 U
4,6-Dinitro-2-methylphenol	840 U	840 U	820 U	830 U	830 U
N-Nitrosodiphenylamine (1)	340 U	340 U	330 U	330 U	330 U
4-Bromophenyl-phenylether	340 U	340 U	330 U	330 U	330 U
Hexachlorobenzene	340 U	340 U	330 U	330 U	330 U
Pentachlorophenol	840 U	46 %	36 %	830 U	21 %
Phenanthrene	340 U	340 U	330 U	330 U	330 U
Anthracene	340 U	340 U	330 U	330 U	330 U
Carbazole	340 U	340 U	330 U	330 U	330 U
Di-n-Butylphthalate	340 U	29 JB	37 JB	17 J	330 U
Fluoranthene	340 U	340 U	330 U	330 U	330 U
Pyrene	340 U	86 %	69 %	330 U	53 %
Butylbenzylphthalate	340 U	340 U	330 U	330 U	330 U
3,3'-Dichlorobenzidine	340 U	340 U	330 U	330 U	330 U
Benzo(a)anthracene	340 U	340 U	330 U	330 U	330 U
Chrysene	340 U	340 U	330 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	340 U	100 JB	190 JB	73 J	61 JB
Di-n-Octyl phthalate	340 U	340 U	330 U	330 U	330 U
Benzo(b)fluoranthene	340 U	340 U	330 U	330 U	330 U
Benzo(k)fluoranthene	340 U	340 U	330 U	330 U	330 U
Benzo(a)pyrene	340 U	340 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	340 U	340 U	330 U	330 U	330 U
Dibenzo(a,h)anthracene	340 U	340 U	330 U	330 U	330 U
Benzo(g,h,i)perylene	340 U	340 U	330 U	330 U	330 U
Tributylphosphate	340 U	340 U	330 U	330 U	330 U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B12632

Lab Name: Lionville Labs, Inc. Work Order: 11343606001Client: TNUHANFORD B01-084 H1392Matrix: (soil/water) SOILLab Sample ID: 0106L112-001Sample wt/vol: 30.2 (g/mL) GLab File ID: C070506Level: (low/med) LOWDate Received: 06/20/01% Moisture: 2 decanted: (Y/N) Date Extracted: 06/21/01Concentrated Extract Volume: 1000(uL)Date Analyzed: 07/05/01Injection Volume: 2.0(uL)Dilution Factor: 1.00GPC Cleanup: (Y/N) NpH: 7.0

CONCENTRATION UNITS:

Number TICs found: 11(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	7.26	100	J
2.	ALKANE	19.54	100	J
3.	ALKANE	20.98	200	J
4.	ALKANE	22.12	300	J
5.	ALKANE	23.17	300	J
6.	ALKANE	24.56	300	J
7.	ALKANE	25.38	100	J
8.	ALKANE	26.21	300	J
9.	ALKANE	28.69	200	J
10.	ALKANE	32.29	200	J
11.	ALKANE	36.11	200	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKAU

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD B01-084 H1392

Matrix: (soil/water) SOIL

Lab Sample ID: 01LE0734-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: C070413

Level: (low/med) LOW

Date Received: 06/21/01

% Moisture: _____ decanted: (Y/N)

Date Extracted: 06/21/01

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 07/04/01

Injection Volume: 2.0 (uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 0

(ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B01-084-29

Page 1 of 1

Collector Fahlberg	Company Contact C W Miller	Telephone No. 372-9274	Project Coordinator TRENT, SJ	Price Code 8N	Data Turnaround
Project Designation Z-9 Trench Well Deepening and Characterization - Soil	Sampling Location 200-Z-9		SAF No. B01-084	Air Quality <input type="checkbox"/>	45 Days

Ice Chest No. <i>ERC 96 665110fz</i>	Field Logbook No. EL1517-2	COA R20ZP2DP61	Method of Shipment Fed EX			
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Shipped To TMA/RECRA	Offsite Property No. <i>A D 0434</i>	Bill of Lading/Air Bill No. <i>42357454-5204</i>				
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POSSIBLE SAMPLE HAZARDS/REMARKS

<2000 PCU/g per BHI-01609

Special Handling and/or Storage	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None					
	Type of Container	#G	#G	#G	#G	#G					
	No. of Container(s)	1	1	1	1	1					
	Volume	250mL	250mL	250mL	500mL	1000mL					

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.	R.R. 8.15.01				
B12632	SOIL	6.15.01	1740	X	X	X	X						

CHAIN OF POSSESSION

Sign/Print Names

SPECIAL INSTRUCTIONS

See SAF Comment Concerning Pu Analysis

Relinquished By <i>R. F. Fahlberg</i>	Date/Time 6-15-01	Received By <i>STB READING</i>	Date/Time 1900	(1) Semi-VOA - 8270A (TCL); Semi-VOA - 8270A (Add-On) (Tributyl phosphate)	Matrix *
Relinquished By <i>Removed from 3728</i>	Date/Time 6-19-01	Received By <i>R. F. Thorson</i>	Date/Time 6-19-01	(2) ICP Metals - 6010A (TAL); ICP Metals - 6010A (Add-on) (Lead); Mercury - 7470 - (CV)	
Relinquished By <i>R. F. Thorson</i>	Date/Time 6-19-01	Received By <i>+60EX</i>	Date/Time	(3) Gamma Spectroscopy (Gadolinium-157, Cobalt-60); Gamma Spec - Add-on (Antimony-124), Iodine-131, Plutonium, Americium-241, Neptunium-237, Thorium-232, Strontium-89, 90, Total Sr	
Relinquished By <i>R. F. Thorson</i>	Date/Time 6/21/01 0935	Received By <i>Richie Henry</i>	Date/Time 6/21/01 0935		
Relinquished By	Date/Time	Received By	Date/Time	Samples stored in Ref. # 2B at the 3728 Shipping Facility on 6/11/01. Collector not available to relinquish samples on 6/19/01 for shipment.	
Relinquished By	Date/Time	Received By	Date/Time		

Matrix *

S=Soil
 SE=Sediment
 SO=Solid
 S=Sludge
 W=Water
 O=Oil
 A=Air
 DS=Drier Solids
 DL=Drier Liquids
 T=Tissue
 WI=Wipe
 L=Liquid
 V=Vegetation
 X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1392 was composed of one solid (soil) sample designated under SAF No. B01-084 with a Project Designation of: Z-9 Trench Well Deepening and Characterization – Soil. SDG H1392 (7017) was batched with SDG H1383 (7012).

The sample was received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.2 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.3 Plutonium-241 Analyses

All Isotopic Plutonium results were less than 1 pCi/gram. No Pu-241 analyses were performed as per SAF No. B01-084.

2.4 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.5 Neptunium-237 Analyses

All Am-241 results were less than 1 pCi/gram. No Np-237 analyses were performed as per SAF No. B01-084.

2.6 Gamma Spectroscopy Analyses

The LCS percent recovery (121%) for Co-60 was slightly above the laboratory protocol limits (80 to 120%), but within the 3σ limits (64 to 136%). No other problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa Mannion
Melissa C. Mannion
Program Manager

8/2/01
Date

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1392

SDG 7017
Contact <u>Melissa C. Mannion</u>

SAMPLE SUMMARY

Client <u>Hanford</u>
Contract No. <u>630</u>
Case no <u>SDG H1392</u>

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B12632	200-Z-9	SOLID		R106110-01	B01-084	B01-084-29	06/15/01 17:40
Method Blank		SOLID		R106075-06	B01-084		
Lab Control Sample		SOLID		R106075-05	B01-084		
Duplicate (R106110-01)	200-Z-9	SOLID		R106110-02	B01-084		06/15/01 17:40

SAMPLE SUMMARY

Page 1

SUMMARY DATA SECTION

Page 3

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-CS</u>
Version <u>3.06</u>
Report date <u>08/02/01</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H1392

SDG 7017
Contact <u>Melissa C. Mannion</u>

QC SUMMARY

Client <u>Hanford</u>
Contract No. <u>630</u>
Case no <u>SDG H1392</u>

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	%	SAMPLE	BASIS	DAYS SINCE RECEIVED	LAB	DEPARTMENT
				SOLIDS	AMOUNT	AMOUNT		COLL SAMPLE ID	SAMPLE ID
7012		Method Blank	SOLID					R106075-06	7012-006
		Lab Control Sample	SOLID					R106075-05	7012-005
7017	B01-084-29	B12632	SOLID	80.1	1357 g		06/20/01	5 R106110-01	7017-001
		Duplicate (R106110-01)	SOLID	80.1	1357 g		06/20/01	5 R106110-02	7017-002

QC SUMMARY

Page 1

SUMMARY DATA SECTION

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-QS</u>
Version <u>3.06</u>
Report date <u>08/02/01</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1392

SDG 7017
Contact Melissa C. Mannion

PREP BATCH SUMMARY

Client Hanford

Contract No. 630

Case no SDG H1392

TEST	MATRIX	METHOD	PREPARATION ERROR			PLANCHETS ANALYZED				QUALI-	
			BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG
Alpha Spectroscopy											
AM	SOLID	Americium 241 in Soil	6994-024	5.0	1			1	1	1	1/1
PU	SOLID	Plutonium, Isotopic in Solids	6994-024	5.0	1			1	1	1	1/1
Beta Counting											
SR	SOLID	Total Strontium in Soil	6994-024	10.0	1			1	1	1	1/1
Gamma Spectroscopy											
GAM	SOLID	Gamma Scan	6994-024	15.0	1			1	1	1	1/1

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY

Page 1

SUMMARY DATA SECTION

Page 5

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 08/02/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1392

SDG 7017
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1392

CLIENT SAMPLE ID LOCATION CUSTODY	MATRIX SAF No	LAB SAMPLE ID COLLECTED		TEST	SUF-FIX		REVIEWED BY	METHOD
		RECEIVED	PLANCHET		AM	GAM		
B12632		R106110-01	7017-001	AM	07/18/01	08/01/01	MCM	Americium 241 in Soil
200-Z-9	SOLID	06/15/01	7017-001	GAM	06/26/01	08/01/01	MCM	Gamma Scan
B01-084-29	B01-084	06/20/01	7017-001	PU	07/14/01	08/01/01	MCM	Plutonium, Isotopic in Solids
			7017-001	SR	06/26/01	08/01/01	MCM	Total Strontium in Soil
Method Blank		R106075-06	7012-006	AM	07/13/01	07/27/01	MCM	Americium 241 in Soil
	SOLID		7012-006	GAM	06/25/01	07/27/01	MCM	Gamma Scan
	B01-084		7012-006	PU	07/13/01	07/27/01	MCM	Plutonium, Isotopic in Solids
			7012-006	SR	06/26/01	07/27/01	MCM	Total Strontium in Soil
Lab Control Sample		R106075-05	7012-005	AM	07/13/01	07/27/01	MCM	Americium 241 in Soil
	SOLID		7012-005	GAM	06/25/01	07/27/01	MCM	Gamma Scan
	B01-084		7012-005	PU	07/13/01	07/27/01	MCM	Plutonium, Isotopic in Solids
			7012-005	SR	06/26/01	07/27/01	MCM	Total Strontium in Soil
Duplicate (R106110-01)		R106110-02	7017-002	AM	07/18/01	08/01/01	MCM	Americium 241 in Soil
200-Z-9	SOLID	06/15/01	7017-002	GAM	06/26/01	08/01/01	MCM	Gamma Scan
	B01-084	06/20/01	7017-002	PU	07/17/01	08/01/01	MCM	Plutonium, Isotopic in Solids
			7017-002	SR	06/26/01	08/01/01	MCM	Total Strontium in Soil

COUNTS OF TESTS BY SAMPLE TYPE										
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
AM	B01-084	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
GAM	B01-084	Gamma Scan	GAMMA_GS	1			1	1	1	4
PU	B01-084	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1			1	1	1	4
SR	B01-084	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
TOTALS				4			4	4	4	16

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 08/02/01

WORK SUMMARY

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EBERLINE SERVICES / RICHMOND
 SAMPLE DELIVERY GROUP H1392

R106075-06

Method Blank

METHOD BLANK

SDG 7017
 Contact Melissa C. Mannion

Client/Case no Hanford SDG H1392
 Contract No. 630

Lab sample id R106075-06
 Dept sample id 7012-006

Client sample id Method Blank
 Material/Matrix SOLID
 SAF No B01-084

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.030	0.16	0.34	1.0	U	SR
Americium 241	14596-10-2	0.046	0.093	0.36	1.0	U	AM
Plutonium 238	13981-16-3	0.014	0.017	0.031	1.0	U	PU
Plutonium 239/240	PU-239/240	0.008	0.017	0.027	1.0	U	PU
Antimony 125	14234-35-6	U		0.062		U	GAM
Potassium 40	13966-00-2	U		0.43		U	GAM
Cobalt 60	10198-40-0	U		0.035	0.050	U	GAM
Cesium 137	10045-97-3	U		0.027	0.10	U	GAM
Radium 226	13982-63-3	U		0.055	0.10	U	GAM
Radium 228	15262-20-1	U		0.12	0.20	U	GAM
Europium 152	14683-23-9	U		0.072	0.10	U	GAM
Europium 154	15585-10-1	U		0.090	0.10	U	GAM
Europium 155	14391-16-3	U		0.064	0.10	U	GAM
Thorium 228	14274-82-9	U		0.039		U	GAM
Thorium 232	TH-232	U		0.12		U	GAM
Uranium 235	15117-96-1	U		0.097		U	GAM
Uranium 238	U-238	U		3.0		U	GAM
Americium 241	14596-10-2	U		0.090		U	GAM

QC-BLANK 39009

METHOD BLANKS
 Page 1
SUMMARY DATA SECTION
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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>08/02/01</u>

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H1392

R106075-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7017</u>	Client/Case no <u>Hanford</u>	SDG H1392
Contact <u>Melissa C. Mannion</u>	Case no <u>No. 630</u>	
Lab sample id <u>R106075-05</u>	Client sample id <u>Lab Control Sample</u>	
Dept sample id <u>7012-005</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B01-084</u>	

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Strontium	22.5	0.90	0.29	1.0	SR		22.0	0.88	102	82-118	80-120
Americium 241	17.6	2.6	0.41	1.0	AM		19.1	0.76	92	78-122	80-120
Plutonium 238	23.6	0.93	0.032	1.0	PU		24.8	0.99	95	89-111	80-120
Plutonium 239/240	25.6	0.99	0.046	1.0	PU		26.4	1.1	97	89-111	80-120
Cobalt 60	0.482	0.060	0.036	0.050	GAM		0.399	0.016	121	64-136	80-120
Cesium 137	0.450	0.047	0.030	0.10	GAM		0.409	0.016	110	69-131	80-120

QC-LCS 39008

LAB CONTROL SAMPLES

Page 1

SUMMARY DATA SECTION

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>08/02/01</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1392

R106110-02

B12632

DUPLICATE

SDG 7017	Client/Case no Hanford	SDG H1392
Contact Melissa C. Mannion	Case no No. 630	
DUPLICATE	ORIGINAL	
Lab sample id R106110-02	Lab sample id R106110-01	Client sample id B12632
Dept sample id 7017-002	Dept sample id 7017-001	Location/Matrix 200-Z-9 SOLID
% solids 80.1	Received 06/20/01	Collected/Weight 06/15/01 17:40 1357 g
	% solids 80.1	Custody/SAF No B01-084-29 B01-084

ANALYTE	DUPLICATE pCi/g	2 σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2 σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3 σ TOT LIMIT
Total Strontium	0.018	0.12	0.26	1.0	U	SR	-0.065	0.13	0.28	U	-	
Americium 241	0	0.12	0.22	1.0	U	AM	-0.030	0.061	0.23	U	-	
Plutonium 238	0.027	0.054	0.21	1.0	U	PU	-0.027	0.054	0.21	U	-	
Plutonium 239/240	0.027	0.054	0.21	1.0	U	PU	0	0.054	0.21	U	-	
Antimony 125	U	0.060			U	GAM	U		0.068	U	-	
Potassium 40	10.7	0.79	0.27			GAM	11.6	0.85	0.30		8	35
Cobalt 60	U	0.027	0.050	U	GAM	U		0.033	U	-		
Cesium 137	U	0.026	0.10	U	GAM	U		0.030	U	-		
Radium 226	0.466	0.053	0.048	0.10		GAM	0.461	0.064	0.064		1	42
Radium 228	0.885	0.12	0.12	0.20		GAM	0.988	0.14	0.14		11	43
Europium 152	U	0.060	0.10	U	GAM	U		0.074	U	-		
Europium 154	U	0.091	0.10	U	GAM	U		0.11	U	-		
Europium 155	U	0.098	0.10	U	GAM	U		0.069	U	-		
Thorium 228	0.839	0.036	0.031			GAM	0.876	0.043	0.038		4	33
Thorium 232	0.885	0.12	0.12			GAM	0.988	0.14	0.14		11	43
Uranium 235	U	0.097		U	GAM	U		0.11	U	-		
Uranium 238	U	3.4		U	GAM	U		3.5	U	-		
Americium 241	U	0.038		U	GAM	U		0.043	U	-		

QC-DUP#1 39007

DUPLICATES

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SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 08/02/01

E B E R L I N E S E R V I C E S / R I C H M O N D
 SAMPLE DELIVERY GROUP H1392

R106110-01

B12632

D A T A S H E E T

SDG 7017 Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> Contract No. <u>630</u>	SDG H1392
Lab sample id <u>R106110-01</u>	Client sample id <u>B12632</u>	
Dept sample id <u>7017-001</u>	Location/Matrix <u>200-Z-9</u>	<u>SOLID</u>
Received <u>06/20/01</u>	Collected/Weight <u>06/15/01 17:40</u>	<u>1357 g</u>
% solids <u>80.1</u>	Custody/SAF No <u>B01-084-29</u>	<u>B01-084</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	-0.065	0.13	0.28	1.0	U	SR
Americium 241	14596-10-2	-0.030	0.061	0.23	1.0	U	AM
Plutonium 238	13981-16-3	-0.027	0.054	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.054	0.21	1.0	U	PU
Antimony 125	14234-35-6	U		0.068		U	GAM
Potassium 40	13966-00-2	11.6	0.85	0.30			GAM
Cobalt 60	10198-40-0	U		0.033	0.050	U	GAM
Cesium 137	10045-97-3	U		0.030	0.10	U	GAM
Radium 226	13982-63-3	0.461	0.064	0.064	0.10		GAM
Radium 228	15262-20-1	0.988	0.14	0.14	0.20		GAM
Europium 152	14683-23-9	U		0.074	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	U	GAM
Europium 155	14391-16-3	U		0.069	0.10	U	GAM
Thorium 228	14274-82-9	0.876	0.043	0.038			GAM
Thorium 232	TH-232	0.988	0.14	0.14			GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		3.5		U	GAM
Americium 241	14596-10-2	U		0.043		U	GAM

DATA SHEETS

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SUMMARY DATA SECTION

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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>08/02/01</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1392

Test AM Matrix SOLID
SDG 7017
Contact Melissa C. Mannion

METHOD SUMMARY
AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1392

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Americium 241
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Preparation batch 6994-024

B12632	R106110-01	7017-001	U
BLK (QC ID=39009)	R106075-06	7012-006	U
LCS (QC ID=39008)	R106075-05	7012-005	ok
Duplicate (R106110-01)	R106110-02	7017-002	- U

Nominal values and limits from method	RDLs (pCi/g)	1.0
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METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 6994-024 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 024															
B12632	R106110-01		0.23	0.500			75	108		33	07/12/01	07/18	SS-027		
BLK (QC ID=39009)	R106075-06		0.36	0.500			49	101			07/12/01	07/13	SS-042		
LCS (QC ID=39008)	R106075-05		0.41	0.500			43	101			07/12/01	07/13	SS-041		
Duplicate (R106110-01) (QC ID=39007)	R106110-02		0.22	0.500			73	108		33	07/12/01	07/18	SS-028		
Nominal values and limits from method 1.0 0.500 20-105 100 100 180															

PROCEDURES REFERENCE AMCMISO_1E_PLATE_AEA
 CP-060 Soil Preparation, rev 3
 CP-070 Soil Dissolution, < 1.0g Aliquot, rev 4
 CP-940 Plutonium Separation and Purification, rev 3
 CP-960 Americium-Curium Purification, Large Aliquot, rev 4
 CP-008 Heavy Element Electroplating, rev 6

AVERAGES \pm 2 SD MDA 0.30 \pm 0.19
 FOR 4 SAMPLES YIELD 60 \pm 33

METHOD SUMMARIES

Page 1

SUMMARY DATA SECTION

Page 11

Lab id TMANC
 Protocol Hanford
 Version Ver 1.0
 Form DVD-CMS
 Version 3.06
 Report date 08/02/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1392

Test PU Matrix SOLID
SDG 7017
Contact Melissa C. Mannion

METHOD SUMMARY
PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG_H1392

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 6994-024						
B12632	R106110-01		7017-001	U	U	
BLK (QC ID=39009)	R106075-06		7012-006	U	U	
LCS (QC ID=39008)	R106075-05		7012-005	ok	ok	
Duplicate (R106110-01)	R106110-02		7017-002	- U	- U	
Nominal values and limits from method			RDLs (pCi/g)	1.0	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX pCi/g	MDA g	ALIQ g	PREP FAC	DILUTION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	PREPARED	ANALYZED	DETECTOR
Preparation batch 6994-024 2σ prep error 5.0 % Reference Lab Notebook 6994 pg. 024																
B12632	R106110-01			0.21	0.500			78	108			29	07/06/01	07/14	SS-034	
BLK (QC ID=39009)	R106075-06			0.031	0.500			88	970				07/06/01	07/13	SS-043	
LCS (QC ID=39008)	R106075-05			0.046	0.500			60	944				07/06/01	07/13	SS-065	
Duplicate (R106110-01) (QC ID=39007)	R106110-02			0.21	0.500			83	107			32	07/06/01	07/17	SS-063	
Nominal values and limits from method				1.0	0.500			20-105	100	100	180					

PROCEDURES REFERENCE PUISO_PLATE_AEA
CP-060 Soil Preparation, rev 3
CP-940 Plutonium Separation and Purification, rev 3
CP-008 Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES MDA 0.12 ± 0.20
YIELD 77 ± 24

METHOD SUMMARIES

Page 2

SUMMARY DATA SECTION

Page 12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/02/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1392

Test SR Matrix SOLID
SDG 7017
Contact Melissa C. Mannion

METHOD SUMMARY
TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1392

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Total Strontium
Preparation batch 6994-024					
B12632	R106110-01		7017-001		U
BLK (QC ID=39009)	R106075-06		7012-006		U
LCS (QC ID=39008)	R106075-05		7012-005		ok
Duplicate (R106110-01)	R106110-02		7017-002	-	U
Nominal values and limits from method		RDLs (pCi/g)		1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAY(S) HELD	ANAL- YZED	DETECTOR	
Preparation batch 6994-024 2σ prep error 10.0 % Reference Lab Notebook 6994 pg. 024																
B12632	R106110-01			0.28	1.00			89	100				11	06/26/01	06/26	GRB-202
BLK (QC ID=39009)	R106075-06			0.34	1.00			78	100					06/26/01	06/26	GRB-229
LCS (QC ID=39008)	R106075-05			0.29	1.00			80	100					06/26/01	06/26	GRB-231
Duplicate (R106110-01) (QC ID=39007)	R106110-02			0.26	1.00			92	100				11	06/26/01	06/26	GRB-203
Nominal values and limits from method				1.0	1.00			30-105	100				180			

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-502 Strontium in Solids, rev 4
CP-519 Strontium Planchet Demounting and Preparation for
90Y Decontamination, rev 3

AVERAGES \pm 2 SD MDA 0.29 \pm 0.068
FOR 4 SAMPLES YIELD 85 \pm 14

METHOD SUMMARIES

Page 3

SUMMARY DATA SECTION

Page 13

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/02/01

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1392

Test GAM Matrix SOLID
SDG 7017
Contact Melissa C. Mannion

METHOD SUMMARY
GAMMA SCAN
GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1392

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6994-024					
B12632	R106110-01	7017-001	U	U	
BLK (QC ID=39009)	R106075-06	7012-006	U	U	
LCS (QC ID=39008)	R106075-05	7012-005	HIGH	ok	
Duplicate (R106110-01)	R106110-02	7017-002	- U	- U	
Nominal values and limits from method		RDLs (pCi/g)	0.050	0.10	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 6994-024 2σ prep error 15.0 % Reference Lab Notebook 6994 pg. 024														
B12632	R106110-01		<u>0.070</u>	771					103		11	06/19/01	06/26	MB,07,00
BLK (QC ID=39009)	R106075-06		<u>0.055</u>	591					103			06/19/01	06/25	01,03,00
LCS (QC ID=39008)	R106075-05		<u>0.036</u>	591					105			06/19/01	06/25	MB,05,00
Duplicate (R106110-01) (QC ID=39007)	R106110-02		<u>0.060</u>	771					130		11	06/19/01	06/26	MB,07,00
Nominal values and limits from method		0.050	591						100		180			

PROCEDURES REFERENCE GAMMA_GS
CP-060 Soil Preparation, rev 3
CP-100 Ge(Li) Preparation for Commercial Samples, rev 3

AVERAGES ± 2 SD MDA 0.055 ± 0.029
FOR 4 SAMPLES YIELD _____ ± _____

METHOD SUMMARIES

Page 4

SUMMARY DATA SECTION

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Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 08/02/01

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B01-084-29	Page <u>1</u> of <u>1</u>		
Collector Fahlberg		Company Contact C W Miller		Telephone No. 372-9274		Project Coordinator TRENT, SJ		Price Code 8N	Data Turnaround 45 Days	
Project Designation Z-9 Trench Well Deepening and Characterization - Soil		Sampling Location 200-Z-9		<u>H1392 (7017)</u>		SAF No. B01-084		Air Quality <input type="checkbox"/>		
Ice Chest No. <u>3m (-137 (zofc))</u>		Field Logbook No. EL1517-2		COA R20ZP2DP61		Method of Shipment Fed EX				
Shipped To (TMA/ECRA) <u>Eberline</u>		Offsite Property No. <u>A010423</u>		Bill of Lading/Air Bill No. <u>42357954 - 5237</u>						
POSSIBLE SAMPLE HAZARDS/REMARKS <u><2000 pCi/g per BHI-01509</u>		Preservation		Cool 4C	Cool 4C	Cool 4C	Cool 4C	None		
		Type of Container		aG	aG	aG	aG	aG		
		No. of Container(s)		1	1	1	1	1		
Special Handling and/or Storage		Volume		250mL	250mL	250mL	500mL	1000mL		
SAMPLE ANALYSIS				Oil & Grease - 413.1	See item (1) in Special Instructions.	VOA - 8260A (TCL)	See item (2) in Special Instructions.	See item (3) in Special Instructions.		
Sample No.	Matrix *	Sample Date	Sample Time							
B12632	SOIL	<u>6-15-01</u>	<u>1740</u>				X			
CHAIN OF POSSESSION		Sign/Print Names			SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By <u>R. F. Fahlberg</u>	Date/Time <u>6-15-01</u>	Received By <u>R. F. Fahlberg</u>	Date/Time <u>1900</u>			See SAF Comment Concerning Pu Analysis				S=Soil
										SE=Sediment
										SO=Solid
										S=Sludge
										W=Water
										O=Oil
										A=Air
										DS=Drum Solids
										DL=Drum Liquids
										T=Tissue
										WI=Wipe
										L=Liquid
										V=Vegetation
										X=Other
Samples stored in Ref. # <u>201</u> at the 3728 Shipping Facility on <u>6-15-01</u> . Collector not available to relinquish samples on <u>10/19/01</u> for shipment..										
LABORATORY SECTION	Received By	Title							Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method				Disposed By				Date/Time	

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Stanford Inc. Date/Time received 6-20-01, 10:45 AMCoC No. B01-084-29Container I.D. No. SML-137 Requested TAT (Days) 45 P.O. Received Yes No

INSPECTION

1. Custody seals on shipping container intact? Yes No N/A
2. Custody seals on shipping container dated & signed? Yes No N/A
3. Custody seals on sample containers intact? Yes No N/A
4. Custody seals on sample containers dated & signed? Yes No N/A
5. Cooler Temperature: _____ Packing material is: Wet Dry
6. Number of samples in shipping container: 1 Sample
7. Number of containers per sample: (1 each) (Or see CoC _____)
8. Paperwork agrees with samples? Yes No
9. Samples have: Tape Hazard labels Rad labels Appropriate sample labels
10. Samples are: In good condition Leaking Broken Container Missing
11. Describe any anomalies: The Airbill NO# wont Match with the chain of custody
13. Was P.M. notified of any anomalies? Yes No Date 6-20-01 2:27 PM
14. Received by E. Degraw Date: 6-20-01 Time: 10:45 AM

Customer Sample No.	cpm	mr/hr	Customer Sample No.	Cpm	mr/hr

Ion Chamber Ser. No. _____

Calibration date _____

Survey Meter Ser No. _____

Calibration date _____